

Gulf Intracoastal Waterway





Texas Department of Transportation

Dewitt C. Greer State Highway Bldg. • 125 E. 11th Street • Austin, Texas 78701-2483 • (512) 463-8585

Governor Rick Perry

Lieutenant Governor David Dewhurst

Speaker of the House of Representatives Tom Craddick

Members of the 79th Legislature

Prior to 1975, the need existed for a single, non-federal sponsor of the Gulf Intracoastal Waterway (GIWW) in Texas. To fulfill that need, the 64th Texas Legislature passed the 1975 Texas Coastal Waterway Act, now codified as Transportation Code, Chapter 51. In this Act, the legislature appointed the State Highway and Public Transportation Commission, now the Texas Transportation Commission (commission), to act as the state's agent in fulfilling the non-federal sponsorship of the GIWW in Texas.

Through this Act, the legislature also required the commission to continually evaluate the GIWW as it relates to Texas, including an assessment of the importance of the waterway, an identification of principal problems and significant modifications to the waterway, and specific recommendations for legislative action, if any.

The mandated evaluation has been conducted and a report prepared. The report reflects the commission's focus on using and maintaining existing transportation corridors of the state. It is essential that state leaders understand the importance of transportation corridors, such as the waterway, when addressing congestion, air pollution, safety, and economic development opportunities associated with an efficient and effective multimodal transportation network.

The 2004 GIWW report is hereby submitted to the 79th Texas Legislature in accordance with Transportation Code, Section 51.007.

Sincerely,

Michael W. Behrens, P.E.
Executive Director





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Gulf Intracoastal Waterway in Texas



Figure 1 - Texas GIWW

Executive Summary

The Texas Department of Transportation (TxDOT) is the state agency charged with providing the safe, effective and efficient movement of people and goods. TxDOT fulfills its mission by focusing on five objectives:¹

- **Reliable Mobility**
- **Improved Safety**
- **System Preservation**
- **Accelerated Project Delivery**
- **Economic Vitality**

To see that these objectives are met, TxDOT has recently created a simplified operating plan involving five steps, or strategies, for ensuring transportation facilities are the best they can be. They are:

- **Plan It**
- **Build It**
- **Use It**
- **Maintain It**
- **Manage It**

This report, the fifteenth in the series as required by the Transportation Code, is submitted on behalf of the Texas Transportation Commission (commission) to the Seventy-Ninth Texas Legislature, summarizing the state's sponsorship efforts to maintain the Gulf Intracoastal Waterway (GIWW) in Texas. The activities of the GIWW fall under the strategy of "Maintain It."

The Texas portion of the GIWW (Figure 1) is over 50 years old and presents a significant challenge to the state to maintain and optimize the benefits of this transportation system. The GIWW has some unique transportation advantages, and it is essential that it be recognized as an important feature during the develop-

ment of an effective and safe transportation system.

The entire GIWW is a 1,300-mile-long, man-made canal that runs along the Gulf of Mexico coastline from Texas' southernmost tip at Brownsville to St. Marks, Florida (Figure 2). The canal links all of the Gulf Coast ports and enables these ports to access the inland waterway system of the United States.

The GIWW is the nation's third busiest waterway with the Texas portion handling over 58 percent of its traffic. In Texas, the GIWW is 423 miles long and is an important component of the state's diversified multimodal transportation system. In 2002, over 63 million short tons of cargo were moved on the Texas portion of the waterway with a commercial value of over 25 billion dollars. In combination with ports, Texas ranked second in the nation in total waterborne tonnage moved in the United States.²

Balancing the environmental issues inherent to the unique Texas coast and the economic and developmental possibilities of the GIWW has been a difficult challenge. One location in particular, where objections have led to legal recourse, is the southernmost reach of the Texas GIWW which flows through the Laguna Madre. Landowners and environmental interests have raised objections to the placement of dredged material. To respond to these objections, the U.S. Army Corps of Engineers (Corps), along with TxDOT and numerous federal and state agencies, have worked for seven years to develop a new dredged material management plan and an update to the 1975 Environmental Impact Statement for this



Figure 2 - 1,300 Mile GIWW

portion of the waterway. The Dredged Material Management Plan and Final Environmental Impact Statement were completed in September 2003.

TxDOT and the Corps also initiated Section 216 Studies for the Texas portion of the GIWW. These studies address functional and environmental problem areas. Funding for these studies is through congressional actions and appropriation. In 2004, all of the GIWW studies were postponed due to funding constraints. TxDOT considers Section 216 Studies to be important and necessary for the current and future operation of the GIWW.

The GIWW was conceived, planned and built many years ago. To build, maintain and manage it in the future will require the continued support of the Texas Legislature. The GIWW is an essential component of the state's and nation's transportation network and is an integral part of the Governor's priority goal: "provide for all of Texas transportation needs for the new century."³ To facilitate future efforts towards this goal, the following items are recommended for consideration:

1

The state advocates the continuance of shallow draft navigation along with maintenance of the GIWW by the Corps.

2

The state advocates the continuation of the Corps Section 216 Studies, which will address current and long-term needs of the GIWW in Texas.

3

The state advocates that dredged material is to be used as a resource when possible, using the Corps Continuing Authorities Program, and that the Texas Coastal Management Program develop rules that

a) reward sponsors of environmental beneficial usage of dredged material projects with mitigation credits

and

b) eliminate maintenance requirements for sponsors of beneficial usage of dredged material projects.

Plan It

The development of the Gulf Intracoastal Waterway (GIWW) required the concerted efforts of federal, state and local interests. Nearly 150 years ago, planning associated with this project began and continues today.

Development History

In 1850, five years after Texas was admitted to the Union, coastal business interests began to connect portions of the state's coastline by dredging links between the natural bays, lakes, rivers and bayous. In 1854, the Galveston and Brazos Canal connected West Galveston Bay to the Brazos River. This canal ranged in depth from three to six feet and was the first navigable link to be constructed on the Texas coast.

In 1873, the federal government passed the Rivers and Harbors Act of 1873. This act appropriated funds for a survey to "connect the inland waters along the margin of the Gulf of Mexico from Donaldson, Louisiana to the Rio Grande River in Texas by cuts and canals." This act was the start of the development of the Intracoastal Waterway. A series of congressional acts passed between 1925 and 1942 allowed for continued expansion of the waterway. By 1941, the GIWW in Texas extended from the Sabine River to Corpus Christi with a bottom width of 100 feet and a depth of nine feet. Legislation passed in 1942 extended the canal to Brownsville and changed its dimensions to 125 feet by 12 feet deep. Construction was completed in 1949. Figure 3 depicts a timeline of the Texas GIWW history.

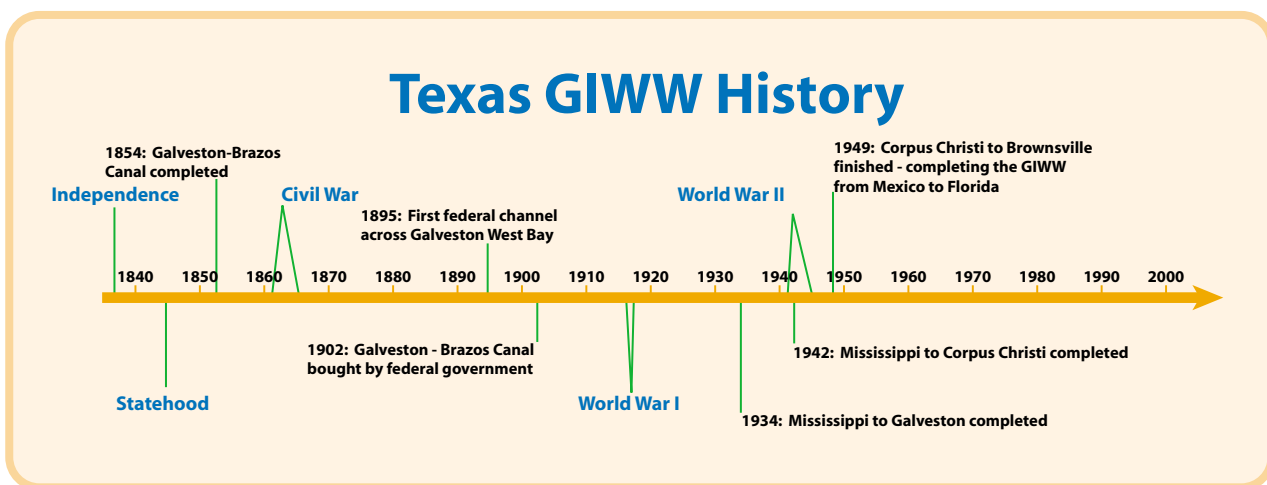


Figure 3 - Timeline

Chapter 1 Plan It

Studies and Research

The Corps, under the authority of the Flood Control Act of 1970, has initiated various Section 216 Studies. These studies look at specific water resources projects that may have changed because of physical or economic reasons. TxDOT acts as the non-federal sponsor for the studies involving the GIWW in Texas.

For the Texas portion of the GIWW, the waterway was divided into five separate Section 216 study areas. These areas have been further divided into six studies to focus on complex or unique problems. Figure 4 illustrates the Section 216 Studies in Texas.



Figure 4 - Section 216 Study Areas

Limited federal appropriations resulted in the postponement of all of the Section 216 Studies in 2004. Studies to be continued in 2005 will be determined during the development of the Corps' 2005 Appropriations Bill. These studies are a necessary and important review of the waterway, particularly since the GIWW in Texas is over 50 years old. Antiquated facilities, erosion and navigational hazards rank among some of the GIWW's top challenges. Coupled with increased recreational traffic on the waterway, the

challenges result in significant delays to commercial users of the GIWW.

In addition to the federal Section 216 Studies, TxDOT has initiated marine transportation-related studies. Several of these marine transportation-related studies were conducted through TxDOT's research program. This program, plus interagency agreements, allowed TxDOT to participate in studies that address various needs of the GIWW. Research studies funded by TxDOT are shown in Table 1-1.

TxDOT Sponsored Research

Table 1-1

PROGRAM	STUDY	RESEARCHER(S)
State Planning Research	Containerized Freight Movement in Texas	University of Texas, Center for Transportation Research
State Planning Research	Landside Access Needs for Port and Waterway Facilities in Texas	University of Texas, Center for Transportation Research
Interagency Agreement	2022 Gulf Intracoastal Waterway Master Plan	Texas A&M University, Texas Transportation Institute



Use and Maintain It

One of the initial functions of the GIWW was to provide protected inland transportation of goods and troops during World War II. It has since evolved into a multipurpose waterway used by recreational and commercial interests. Recreational uses include fishing, skiing, sightseeing and

protected water transportation routes for travelers along the coast. Commercial uses include the movement of domestic and international cargo, harvesting of fish and shellfish, and servicing of the gulf and coastal oil and gas industry.

Direct and Indirect Benefits

The GIWW provides some important direct and indirect benefits to the state, such as:

1

In 1999, the GIWW facilitated commercial and sport fishing entities to catch an estimated 25.7 million pounds of shrimp, oysters, crabs and finfish within Texas bay systems amounting to a wholesaler's value of \$32.6 million.⁴

2

In 2002, 63.39 million short tons (one short ton equals 2,000 pounds) of goods were moved on the Texas GIWW. The estimated value of these goods was over \$25 billion. This was accomplished by approximately 99,970 barge one-way trips.⁵

3

The movement of goods by barges on the intracoastal waterway is an efficient, economical and environmentally friendly mode of transportation (Figure 5).⁶

4

The movement of goods by barge is a safe mode of transportation. In 2002, according to the Office of Hazardous Materials Safety, the total number of documented hazardous spills in Texas was 37 by air, 1,035 by highway, 126 by railway and two by water transportation.⁷

Chapter 2 Use and Maintain It

Capacity

1 Barge = 15 Railcars = 60 Trucks

15 Railcars

60 Trucks



Efficiency

Distance one gallon of fuel carries one ton of cargo

60 Miles by Truck

202 Miles by Railcar

514 Miles by Barge

Emissions

Pounds produced to move one ton of cargo 1,000 miles

.09 Barge

.46 Railcar

.63 Truck

Hydrocarbons

.20 Barge

.64 Railcar

1.90 Truck

Carbon Monoxide

.53 Barge

1.83 Railcar

10.17 Truck

Oxides of Nitrogen

Figure 5 - Mode Comparison

Operational Concerns

The waterway, in its current form, is over 50 years old. During the past 50 years, the size of individual barges and towboats, the width and length of barges lashed together and pushed as a unit, and the volume of traffic have steadily increased. These factors have led many to believe that the 1949 dimensions of the GIWW

and its associated structures do not adequately support the state of barge transportation today. The Brazos River Floodgates and the Colorado River Locks are, for example, two lock type structures on the waterway that may need to be removed or modified. The structures are only 75 feet wide. To move through the structures, vessel operators must park their

tows, break the barges apart, move them through the locks in smaller sets or individually, and then put them back together on the other side. This process, known as tripping, is difficult and causes delays estimated to cost over two million dollars a year to the towing industry at each location.⁸

The area in West Galveston Bay, where the GIWW passes beneath the dual Interstate Highway 45 bridges and the Galveston Island Railroad Bridge, is also a major problem. The opening for barge traffic through these structures is only 105 feet wide for a distance of about 800 feet. Repairs to damages to the fender systems of these structures cost TxDOT an estimated half million dollars each year, and the towing industry has identified this spot as the greatest hazard to navigation on the entire 1,300 miles of the GIWW. TxDOT is currently building replacement highway bridges which will have a 300 feet opening for navigation interests. These replacement bridges have a 2008 estimated completion date. The Coast Guard and local legislators are working on replacing the railroad bridge under the authority of the Truman-Hobbs Act, but construction funding has not been secured at this time.

TxDOT Areas of Focus

For fiscal years (FY) 2003 and 2004, TxDOT was appropriated \$1.35 million dollars for acquiring dredged material disposal sites. During this period, the Corps requested that TxDOT acquire 220 acres of land on

the Bolivar Peninsula in Galveston County. The acquisition process to acquire this acreage had progressed to the condemnation phase as FY 2004 ended.

TxDOT, as the non-federal sponsor of the GIWW, works with the Corps to coordinate dredging activities during the year.

During 2003, approximately \$27,400,000 in federal funds was expended by the Corps in 100 percent federally contracted and funded projects to operate and maintain the structures and navigability of the Texas GIWW. Approximately 7,810,000 cubic yards of sediment were dredged in eight separate projects. Of this material, approximately 4,600,000 cubic yards were placed in confined placement sites, 2,143,000 cubic yards were placed in open-bay sites, and 1,067,000 cubic yards were used beneficially.⁹ Figure 6 depicts the relative volumes that were removed and the location along the waterway.

During 2004, approximately \$24,000,000 in federal funds was expended by the Corps in 100 percent federally contracted and funded projects to operate and maintain the structures and navigability of the Texas GIWW. Approximately 2,697,000 cubic yards of sediment were dredged in two separate projects. Of this material, approximately 1,282,000 cubic yards were placed in confined placement sites, 1,105,000 cubic yards were placed in open-bay sites, and 310,000 cubic yards were used beneficially.⁹ Figure 6 depicts the relative volumes that were dredged and their relative location along the waterway.

Chapter 2 Use and Maintain It



Figure 6 - FY 2003 and 2004 Dredging

During FY 2003–2004, TxDOT participated in two GIWW beneficial use projects with the Corps. TxDOT plans to combine \$138,960 in state funds with over \$3,000,000 from the Corps to create 42 acres of emergent and marshland habitat from 210,000 cubic yards of dredged

material in Aransas and Calhoun counties. These projects are entering the first planting stage and should be fully completed by 2008. Figure 7 illustrates how a typical habitat creation beneficial use project works.

A Beneficial Use Process

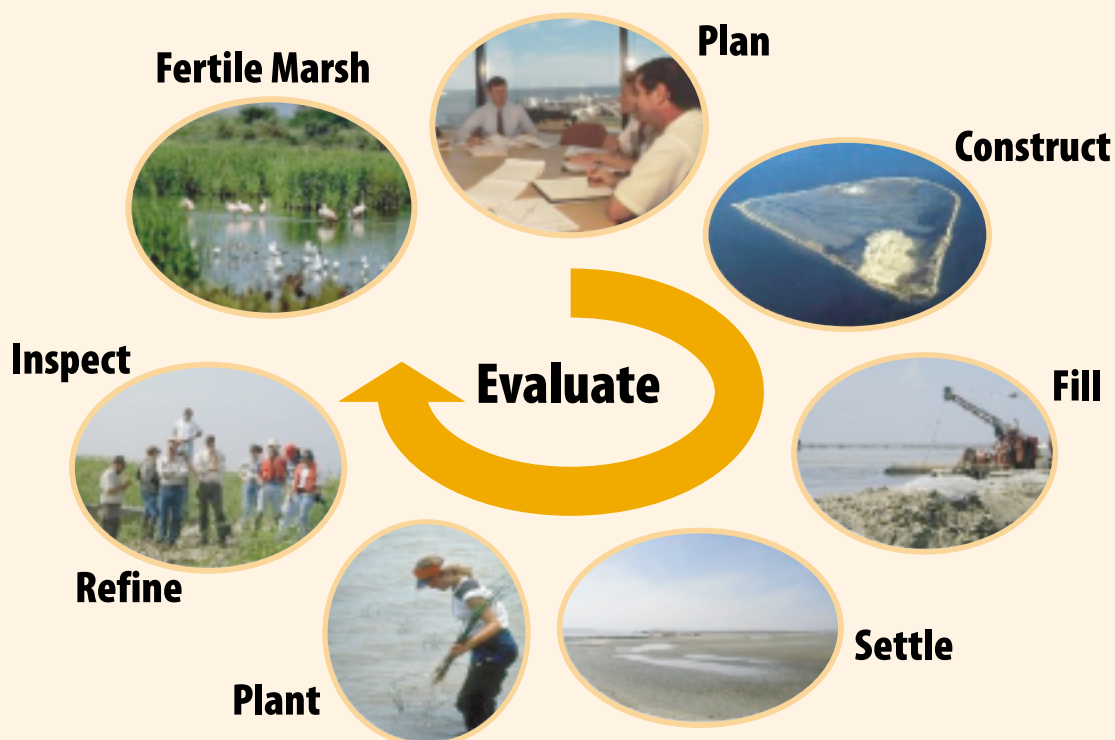


Figure 7 - Habitat Creation

To facilitate actions within state government, TxDOT formed the Gulf Intracoastal Waterway Advisory Committee (GIWAC). This committee advises and assists TxDOT in determining environmentally suitable dredged material placement locations; in developing modifications to the GIWW; and in developing alternative dredged material disposal plans. The committee members were consulted in 2004 and they supported TxDOT's participation in two beneficial use of dredged material projects being built by the Corps on the Aransas National Wildlife Refuge.

TxDOT was also a member of various Interagency Coordination Teams (ICT) established by the Corps. These teams were composed of federal and state agencies with inter-linked responsibilities for or affected by the GIWW. During the 2003-2004 biennium, TxDOT was a member of four ICTs. The ICTs addressed concerns within the Laguna Madre, Aransas National Wildlife Refuge, coastal erosion between Sabine Pass and San Luis Pass, and the Corpus Christi Ship Channel Improvement Plan.

The Laguna Madre GIWW ICT completed their Dredged Material Management Plan (DMMP) and Final Environmental Impact Statement (EIS) in September 2003. The Record of Decision (ROD) was issued by the Corps in April 2004.

The Corpus Christi Ship Channel Improvement Plan Regulatory Agency Coordination Team completed their Final EIS and DMMP in April 2003. The project is awaiting federal authorization for construction.

The Aransas Wildlife Refuge team previously completed their EIS and DMMP and is now designing various beneficial use of dredged material projects to be built over the next several dredging cycles. TxDOT and the Corps are developing two of these projects and planting of Phase I was started in late 2004.

The Sabine Pass to San Luis ICT had its first meeting on June 21, 2004. A subcommittee was formed to develop information regarding affected habitat. The full ICT will meet once the subcommittee finishes their data collection.

Legislative Recommendations

There are various items of possible legislative concern related to future operations of the GIWW. As previously mentioned, the bridges to Galveston Island continue to pose a navigational hazard to commercial navigation. While TxDOT is currently replacing the highway bridges with new bridges that will have at least a 300 foot navigation opening, the replacement of the Galveston Railroad Bridge has not begun. This location on the GIWW will continue to be a navigational hazard until all of the bridges are replaced.

Funding levels are another area of concern. The nation's waterway infrastructure has been suffering due to inadequate funding over the years. In 2004, the Galveston Corps of Engineers spent the entire Operations and Maintenance (O&M) budget for Texas in the first five months of the year. O&M activities have been deferred, resulting in the slow degradation of the waterway infrastructure. Navigation restrictions to waterways with extensive chemical or petro-chemical industrial developments are occurring more frequently. The viability of many of these industries will be challenged if waterborne transportation is not able to continue.

The increased development of beneficial use of dredged material projects has also created various fiscal, operational and jurisdictional problems for the state. First, the Corps has included numerous beneficial use of dredged material projects in their updated DMMPs for navigational projects in Texas. These projects are funded from the O&M budget, but as previously mentioned, the O&M budget has not received sufficient funding. A means to address these funding shortfalls

within available fiscal resources is to use the Corps' Continuing Authorities Program. This program is a cost sharing program between the federal government and a local sponsor. Any funding received for projects in Texas would be in addition to O&M funding. Second, there is a growing concern regarding beneficial use projects and future obligations of the builders of those projects. Currently, entities expending additional funds to use dredged material in a beneficial manner are required to agree to manage and pay for future modifications to these projects. This policy creates an open-ended funding obligation for the entities choosing to build beneficial projects from dredged material. Such a policy is actually a disincentive towards building any projects with dredged material. Third, while there are desires for the development of beneficial use of dredged material projects, costs are averaging around three times higher than traditional dredged material placement activities. If beneficial use projects were associated with mitigation credits, there would be an incentive for expending the additional funds necessary to create these projects.

Finally, limited federal appropriations resulted in the postponement of all of the Section 216 Studies in 2004. Studies to be continued in 2005 will be determined during the development of the Corps' 2005 Appropriations Bill. These studies are a necessary and important review of the waterway, particularly since the GIWW in Texas is over 50 years old. Antiquated facilities, erosion and navigational hazards rank among some of the GIWW's top challenges. Coupled with increased recreational traffic on the waterway, the

Chapter 3 Legislative Recommendations

challenges result in significant delays to commercial users of the GIWW.

The GIWW in Texas is an important component of the state's multimodal transportation system. Maintaining and optimizing the benefits of the GIWW is a big challenge. The state must balance the benefits of maintaining a modern and diverse transportation infrastructure, while fostering the protection and enhancement of the coastal environment. As Texas

enters the next millennium, both state and national economic activities are expected to grow, providing additional transportation opportunities and challenges.

To support the state's non-federal sponsorship of the GIWW and facilitate planning, maintenance, preservation, research and improvement of the waterway, the following items are recommended for consideration by the Texas Legislature:

1

The state advocates the continuance of shallow draft navigation along with the continuation of maintenance of the GIWW by the Corps.

2

The state advocates the continuation of the Corps Section 216 Studies, which will address current and long-term needs of the GIWW in Texas.

3

The state advocates that dredged material is to be used as a resource when possible, using the Corps Continuing Authorities Program, and that the Texas Coastal Management Program develop rules that

a) reward sponsors of environmental beneficial usage of dredged material projects with mitigation credits

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b) eliminate maintenance requirements for sponsors of beneficial usage of dredged material projects.

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125 East 11th Street, Austin, TX 78701
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